City of Huntington Beach
Department of Planning & Building

2013 TITLE 24, PART 6
RESIDENTIAL LIGHTING

(*A guide to meeting, California's 2013 Building Energy Efficiency Standards*)

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This guide is designed to help builders, lighting designers, contractors, and other end users become more familiar with the lighting portion of California's 2013 Title 24, Part 6 residential lighting standards.

REQUIREMENTS

This guide covers the lighting requirements set forth under Title 24, Part 6 for the most common residential space types.

***NOTE:** This guide is not intended to be used in lieu of California's Title 24 Building Energy Efficiency Standards, and it is not a substitute for the code itself. Please visit www.energy.ca.gov/title24 to download the official 2013 Title 24 Building Energy Efficiency Standards, Errata, Reference Appendices, and the Residential Compliance Manual.

EFFICACY CLASSIFICATION

Two Strategies for Compliance

Title 24, Part 6 offers several methods of reducing lighting energy use in homes. Two main strategies require:

1. High-efficacy light sources, sometimes requiring controls
2. Low-efficacy light sources paired with mandatory controls

*Some spaces, like garages, laundry rooms and utility rooms, require both high-efficacy luminaires and vacancy sensors.

*The full criteria for classifying luminaires as either high- or low-efficacy are listed in **Section 150.0(k) (Tables 150.0-A and 150.0-B)**. Certification requirements for LEDs are detailed in **Joint Appendix JA8**.

*The residential standards also set basic requirements for how these strategies must be applied in different residential spaces, e.g., kitchens, bathrooms, garages.

High-Efficacy Sources & Luminaires

The following types of light sources and luminaires satisfy Title 24 high-efficacy requirements:

- Residential LED luminaires certified to the California Energy Commission

- Pin-based linear or compact fluorescent lamps with electronic ballasts
- Lamps with a GU-24 base
- Pulse-start metal halide lamps
- Induction lamps
- High-pressure sodium lamps

Low-Efficacy Sources & Luminaires

The following lamps and luminaires are classified as low-efficacy for purposes of Title 24 compliance:

- LED luminaires not certified to the California Energy Commission
- Screw-base lamps or luminaires capable of operating any type of incandescent lamp
- Track lighting that allows relocation of luminaires without altering wiring
- Luminaires compatible with low-efficacy sources, including any luminaire that allows for conversion between high- and low- efficacy sources without changing the luminaire's housing or wiring
- Adaptors that allow the use of low-efficacy lamps in fixtures intended to use high-efficacy lamps
- Mercury vapor lamps

REQUIREMENTS BY SPACE TYPE

Kitchens **(Section 150.0(k))**

Kitchen lighting includes all permanently installed lighting in:

- Kitchens (note: interior cabinet lighting has a separate lighting power allotment)
- Adjacent spaces that are not separately switched, such as nooks and dining areas

Compliance Requirements:

1. At least 50% high-efficacy (controls optional): High-efficacy luminaires must constitute at least 50% of the total rated lighting power in kitchens. Because high-efficacy luminaires typically consume less power than other luminaires, about three-quarters of the luminaires in the kitchen are likely to be high efficacy. When switched separately from kitchen lighting, the lighting for dining areas, breakfast nooks or other adjacent spaces is not included in the 50% high-efficacy calculation.

   For both, low-efficacy and high-efficacy luminaires, the installed lighting power is the maximum rated power (watts) of the luminaire, including power used by ballasts. This rating must be listed on the luminaire following UL standards.

   Undercabinet or cabinet lighting that projects light primarily outside the cabinetry is considered permanently installed lighting and counts toward the 50% high-efficacy requirement. This includes permanently installed, high-efficacy undercabinet luminaires that are not hard-wired but plug in to kitchen wall outlets.

   Blank electrical boxes for future installations: Each electrical box with a blank cover, or where no luminaire, surface-mounted ceiling fan or other electrical equipment has been installed, is counted as 180 watts of low-efficacy lighting power.

2. Earn more low-efficacy lighting: If all lighting, both high-efficacy and low-efficacy, is controlled by dimmers, vacancy sensors or a lighting control system, the standards allow additional controlled low-

efficacy lighting to be installed in kitchens beyond the 50% maximum: up to 50 watts in units 2,500 ft2 or smaller, and up to 100 watts in units larger than 2,500 ft2. There is no limit to how much high-efficacy lighting may be installed.

3. Manual control: All lighting must have readily accessible manual controls, allowing occupants easy control of lighting in the space.

4. Separate control of high-efficacy and low-efficacy lighting: All high-efficacy luminaries must be controlled separately from all low-efficacy luminaires. Additionally, each lighting layer that serves a unique function should operate independently.

Internal Cabinet Lighting **(Section 150.0(k) 4)**

Internal cabinet lighting that is permanently installed strictly for the purpose of illuminating cabinet interiors is not counted as kitchen lighting and should not be counted toward the 50% high efficacy requirement.

*This lighting may use no more than 20 watts per linear foot of illuminated cabinet space. Linear footage may be determined one of three ways:

1. The total horizontal length of cabinets
2. The sum of the heights of each cabinet section
3. The sum of several height measurements, taken no closer than 40" from each other (recommended when internal lighting is installed in several cabinets of different heights)

Renovation Projects

If a homeowner replaces a single luminaire in the kitchen, the new luminaire must be high - efficacy. There is no need to replace other luminaires if they are not part of the project.

Bathrooms **(Section 150.0(k)5)**

Compliance Requirements:

1. One high-efficacy luminaire**:** Each bathroom must have at least one high-efficacy luminaire.
2. Vacancy sensors: Low-efficacy lighting in bathrooms must be controlled by vacancy sensors.
3. Switch separately: Control lighting that is integral to ceiling fans separately from the ventilation.

Garages, Laundry Rooms, & Utility Rooms **(Section 150.0(k)6)**

Compliance Requirements:

1. High efficacy and controls: High-efficacy luminaires are required in garages, laundry rooms and utility rooms, and these must be controlled by a vacancy sensor.
2. Garage door openers: Lighting integral to garage door openers does not have to be high-efficacy when there are no more than two screw-base sockets integrated by the manufacturer and the lights automatically turn ON and OFF.

Other Rooms **(Section 150.0(k)7)**

*This category covers any room or area that is not a kitchen, bathroom, laundry room, garage, or utility room, including:

··Bedrooms ··Living Rooms ··Home Offices ··Dining Rooms (if switched separately from kitchens) ··Nooks, if switched separately from kitchen lighting ··Hallways··Attic spaces··Closets 70 ft2 and larger

Compliance Requirements:

Three compliance options are available for permanently installed lighting in this residential space category:

1. High-efficacy lighting
2. Low-efficacy lighting controlled by a vacancy sensor
3. Low-efficacy lighting controlled by a dimmer switch

*These options may be used in combination with one another; for example, high-efficacy downlights and dimmable low-efficacy track lights — both on separate dimmer switches — may be installed in the same living room.

*Choose high-efficacy luminaires AND dimmer switches to exceed code requirements, improve efficiency and make lighting adjustable in areas like bedrooms, living rooms and dining rooms, where different activities call for varying light levels.

Outdoor Lighting **(Section 150.0(k)9)**

Compliance Requirements:

1. <u>High efficacy or controls</u>: All lighting attached to the exterior of a residential building or to other buildings on the same lot must follow one of these two compliance strategies:

- *All high-efficacy lighting*
- *Low-efficacy lighting* (controlled by a motion sensor AND a photocontrol, astronomical time clock or EMCS to automatically reduce lighting energy use when sufficient daylight is available)

2. <u>Manual control</u>: Lighting must be controlled by a manual ON / OFF switch that is not capable of turning on any lighting that has been shut off by an automatic lighting control.

3. <u>Temporary motion sensor overrides</u>: Motion sensors may have a temporary override function that allows luminaires to stay switched ON regardless of motion detection, but the motion sensor must automatically reactivate within six hours.

4. <u>Address Signs:</u> Internally illuminated address signs must consume no more than 5 W of power.

*In areas where the nonresidential lighting standards apply, internally illuminated signs must not exceed 12W / ft*2*, and externally illuminated signs must not exceed 2.3W / ft*2*.